

Application Serial No. 10/663,077
Reply to Office Action of February 14, 2008

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PATENT
Docket: CU-6013

Amendments to the Claims

The listing of claims presented below replaces all prior versions, and listings, of claims in the application.

Listing of claims:

1. (currently amended) A process for production of an optically diffractive structure provided with a surface configuration having a corrugation-like shape including a plurality of peak-like shapes and valley-like shapes, comprising steps of:

providing a duplication plate material provided with a surface configuration having a corrugation-like shape including a plurality of peak-like shapes and valley-like shapes[.], and the surface configuration comprises the following (a), (b), or (c):

(a) a collection of plural sections different in corrugation direction and/or corrugation cycle, wherein peak-like shapes and valley-like shapes and/or each peak-like shape height may be different;

(b) a corrugation-like shape including a plurality of peak-like shapes and valley-like shapes comprising individually standing peak-like shapes; or

(c) a corrugation-like shape formed of relief hologram, and

having a cross-sectional surface crosswise to said corrugation, in which all cross-sectional areas above a midline of peak-like shapes are smaller than all cross-sectional areas below the midline of valley-like shapes adjacent to said peak-like shapes, the midline being a line drawn by connecting midpoints of the height of each peak-like shape, and a ratio of each cross-sectional area above the midline of each peak-like shape to each cross-sectional area below the midline of each valley-like shape is from 0.95 / 1.05 to 0.8/1.2 ~~a cross-sectional area above a midline of one peak-like shape is smaller than a cross-sectional area below the midline of one valley-like shape adjacent to said one peak-like shape, the midline being a line drawn by connecting midpoints of the height of each peak-like shape;~~

providing an optically diffractive layer made of ionizing radiation curable resin;

pressing the optically diffractive layer by embossing with the duplication plate material under a heating or non-heating condition to impart a surface configuration

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having a corrugation-like ~~configuration-like~~ shape including a plurality of peak-like shapes and valley-like shapes to the optically diffractive layer;

curing the optically diffractive layer with ionizing radiation at the time of embossing with the duplication material or after peeling the duplication plate material from the optically diffractive layer used for embossing; and

peeling the duplication plate material from the cured optically diffractive layer in the case of curing the optically diffractive layer with ionizing radiation at the time of embossing.

2. (original) A process for production of an optically diffractive structure according to claim 1, wherein the middle line is drawn crosswise to a tangent to an inflection of the corrugation when the corrugation is curved.

3. (cancelled)

4. (cancelled)

5. (currently amended) A medium having an optically diffractive structure produced by a process comprising steps of:

providing a duplication plate material provided with a surface configuration having a corrugation-like shape including a plurality of peak-like shapes and valley-like shapes and the surface configuration comprises the following (a), (b) or (c):

(a) a collection of plural sections different in corrugation direction and/or corrugation cycle, wherein peak-like shapes and valley-like shapes and/or each peak-like shape height may be different;

(b) a corrugation-like shape including a plurality of peak-like shapes and valley-like shapes comprising individually standing peak-like shapes; or

(c) a corrugation-like shape formed a relief hologram, and

having a cross-sectional surface crosswise to said corrugation, in which all cross sectional areas above a midline of peak-like shapes are smaller than all cross-sectional areas below the midline of valley-like shapes adjacent to said peak-like shapes, the

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midline being a line drawn by connecting midpoints of the height of each peak-like shape, and a ratio of each cross-sectional area above the midline of each peak-like shape to each cross-sectional area below the midline of each valley-like shape is from 0.95 / 1.05 to 0.8/1.2 ~~a cross-sectional area above a midline of one peak-like shape is smaller than a cross-sectional area below the midline of one valley-like shape adjacent to said one peak-like shape, the midline being a line drawn by connecting midpoints of the height of each peak-like shape;~~

providing an optically diffractive layer made of ionizing radiation curable resin;
pressing the optically diffractive layer by embossing with duplication plate material under a heating or non-heating condition to impart a surface configuration having a corrugation-like shape including a plurality of peak-like shapes and valley-like shapes to the optically diffractive layer;

curing the optically diffractive layer with ionizing radiation at the time of embossing with the duplication material or after peeling the duplication plate material from the optically diffractive layer used for embossing; and

peeling the duplication plate material from the cured optically diffractive layer in the case of curing the optically diffractive layer with ionizing radiation at the time of embossing.

6. (cancelled)

7. (cancelled)

8. (previously presented) The process according to claim 1, wherein a long optically diffractive layer is subject to consecutive embossing with the use of the duplication plate material which is wrapped around a cylindrical plating drum in the step of pressing to impart the surface configuration.

9. (previously presented) The medium according to claim 5, wherein a long optically diffractive layer is subject to consecutive embossing with the use of the duplication plate material which is wrapped around a cylindrical plating drum in the step of pressing to

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impart the surface configuration.

10. (previously presented) The process according to claim 1, wherein the optically diffractive structure is relief hologram.

11. (previously presented) The medium according to claim 5, wherein the optically diffractive structure is relief hologram.

12. (previously presented) The process according to claim 1, wherein the optically diffractive structure has at least an area in which a peak is not lined in parallel with the adjacent peak thereof.

13. (previously presented) The media according to claim 5, wherein the optically diffractive structure has at least an area in which a peak is not lined in parallel with the adjacent peak thereof.

14. (previously presented) The process according to claim 1, wherein the optically diffractive structure comprises a random combination of plural sections different in diffraction direction.

15. (previously presented) The media according to claim 5, wherein the optically diffractive structure comprises a random combination of plural sections different in diffraction direction.

16. (new) The process according to claim 1, further comprising a step of providing a reflection layer on the optically diffractive layer.

17. (new) The process according to claim 5, further comprising a step of providing a reflection layer on the optically diffractive layer.